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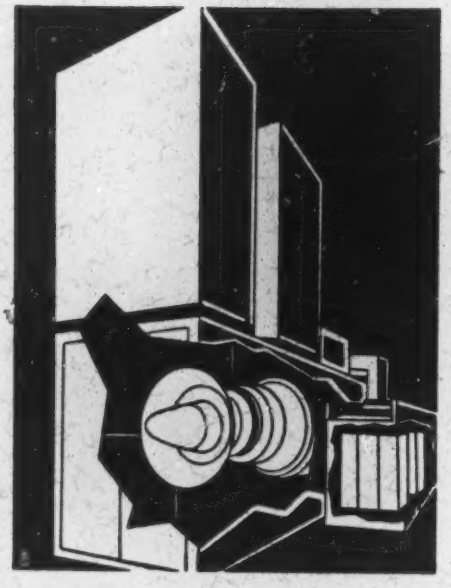
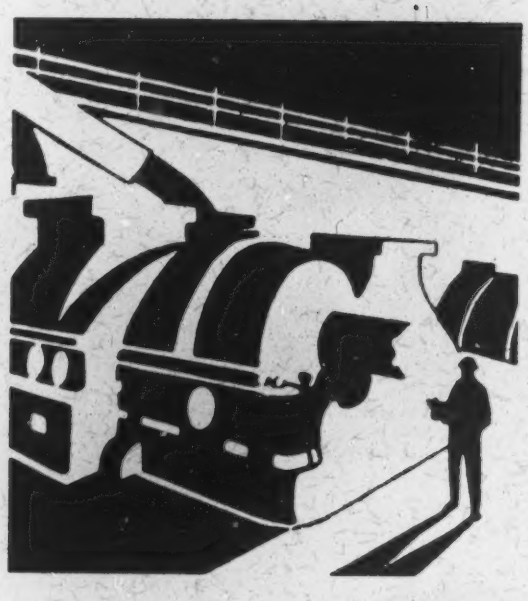
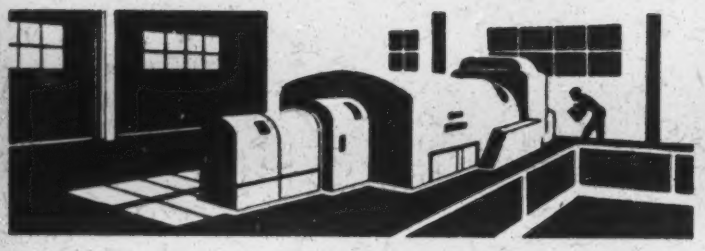
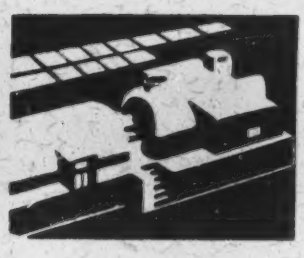
ELECTRIC POWER EQUIPMENT REPORT









EDISON ELECTRIC INSTITUTE

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ELECTRIC POWER EQUIPMENT REPORT

UTILITY ACTUAL & SCHEDULED ADDITIONS

MANUFACTURERS' EQUIPMENT ORDERS & SHIPMENT SCHEDULES

Prepared by
Edison Electric Institute
Statistics Department
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SUMMARY

Section I contains a chart, text and tables dealing with the history of electric generator orders, removals from schedule and postponements of new generating installations, actual installations, and installation backlogs at the end of each year from 1974 through 1991.

Section II is made up of aggregate tables and itemized listings of both actual and scheduled additions to generating capability, showing megawatt ratings and year of commercial operation. The individual generating units making up the megawatts added during 1991 are identified in the actual additions listing on page 8. The scheduled additions listing starts on page 11.

During the year 1991 the electric utility industry of the contiguous United States put into operation 4,602 megawatts of new electric generating capability. Table 1, which includes all units one megawatt capacity and larger, shows that 22 units with capability ratings aggregating 3,940 megawatts were thermal, and 3 units rated at 662 megawatts were hydraulic. Five of the thermal units were conventional steam turbine-generators. There were no nuclear units placed in service.

Section III of this report displays the results of what is now an annual survey on the ordering, shipment, and scheduled shipments of heavy electric power equipment as of January 1, 1992.

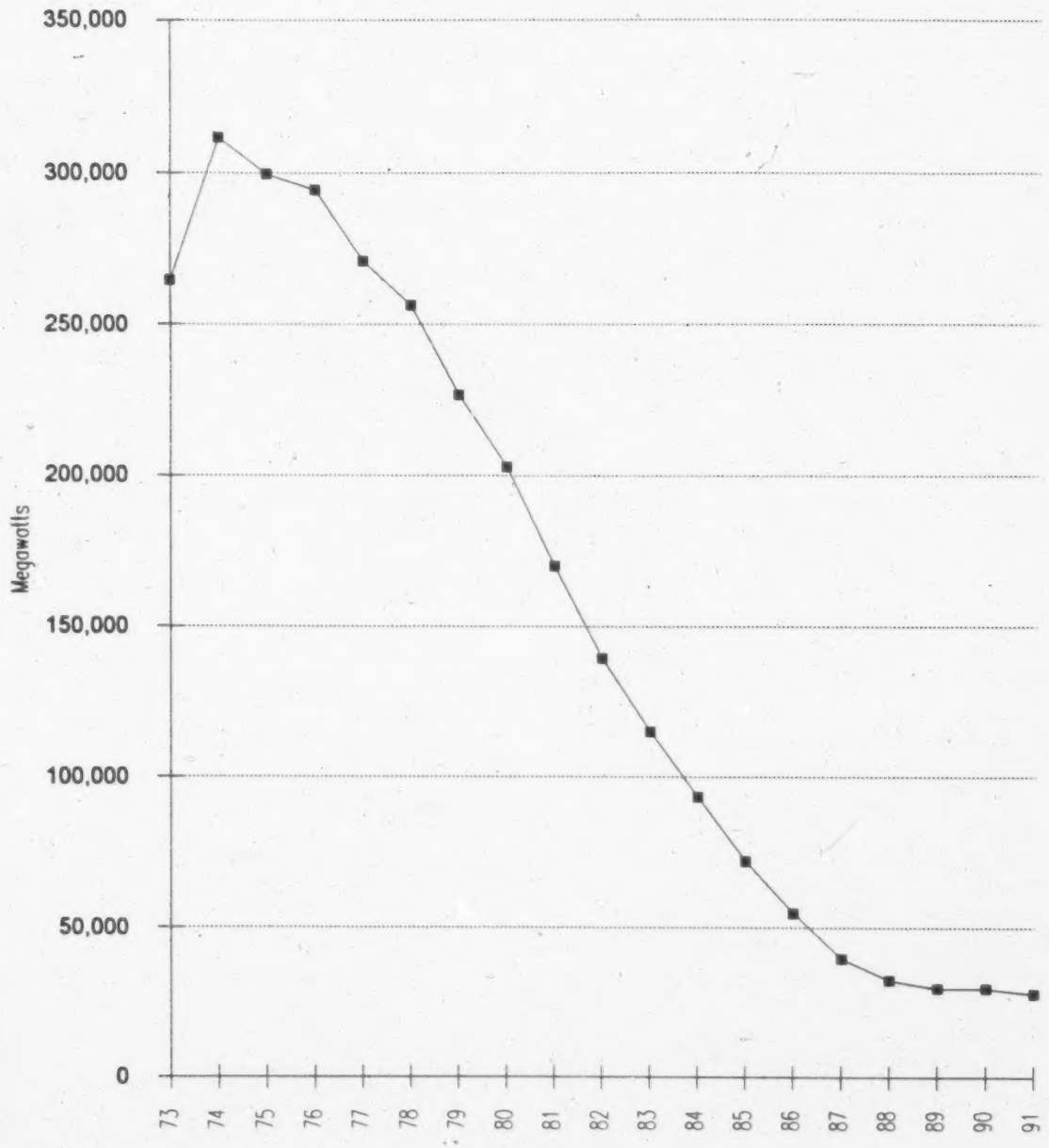
Data in this report cover the total electric utility industry of the contiguous United States, including Investor-Owned systems, Rural Electric Cooperatives, and governmental agency systems--Federal, Municipal and State & Local. Equipment ordered by non-utilities is included under U.S. Industrial customers in the shipment tables. Non-utility units are not included, however, in the actual and scheduled additions tables showing year of installation.

A new feature introduced in this report is:

Table 23 - History of Electric Equipment Manufacturers' Name Changes, Mergers, Buy-Outs, and Reorganizations through 1991.

This report replaces the *Electric Power Annual Report*, last published in 1989. That title was superseded in 1990 by the first, transitional issue of the *Electric Power Equipment Report*. This 1991 edition incorporates its new features plus the one mentioned above. Historical power supply data (capabilities, peaks, net energy for load) have been dropped. You are referred to NERC's *Electricity Supply & Demand 1992-2001* publication for such information.

Chart 1 -- Year-End Backlogs of Scheduled New Capacity, 1973-91 U.S. Electric Systems



SECTION I

HISTORY OF EQUIPMENT ORDERS, REMOVALS FROM SCHEDULE, INSTALLATIONS, AND YEAR-END INSTALLATION BACKLOGS

A Decade and a Half of Continued Reductions in Planned New Capacity

The record year for generating equipment ordering was 1974, when manufacturers booked two hundred units totaling ninety-four gigawatts. Since that year, there has been a continuous erosion in the total amount of new generating capacity planned by the electric utility industry. Chart 1 shows that the total scheduled backlog of future installations (expansion program) had reached a record level of over 310 gigawatts by the end of 1974. As can be seen from Table 1, the decline in the expansion program from 300 gigawatts in 1975 to 30 gigawatts at the end of 1989 was a function of two factors: removals of planned projects from the schedule, and the fact that the amount of capacity installed during each of the years exceeded the new capacity ordered. The backlog held at a relatively constant 30 and 28 gigawatts, respectively, at year-ends 1990 and 1991.

The reductions in planned new capacity have been made largely in response to successive decreases in the industry's annual long-term projections of peak demand growth compiled each spring by the North American Electric Reliability Council--from a ten-year projection of 7.6 percent in 1974 to 1.8 percent in 1991 and 1992. These reductions in projected electricity growth rates, in turn, can be attributed to the cumulative experience of less than expected growth in electric demand for more than a dozen years, increased utilization of load management and conservation techniques, and a decline in projected economic activity.

The 10 to 12 years it takes between planning a new generating unit and putting it into service has meant that the successive decreases in long-term demand projections have caused the postponement and cancellation of many generating units placed in the schedule during earlier periods of higher load growth expectations. Also, an appreciable amount of new capacity has been canceled or deferred because of the financial constraints faced by the electric utility industry. The record year for cancellations and postponements of generating projects was 1981. During that year, 27 steam turbine-generators totaling 28,788 megawatts were removed from the planning schedule and 54 units aggregating 43,563 megawatts were delayed one year or more.

There is a danger that the pendulum of long-term growth projections has already swung too far toward the negative. Some companies, principally because of low earnings, lack the financial ability to build new plants to replace old generating units as they wear out, much less build new plants in anticipation of future load growth. The long lead-times required to bring base load generation into service mean that if economic recovery or prolonged hot or cold weather should cause large increases in electricity use, the already minimal reserve margins of today could be reduced to dangerously low levels before enough new generating plants could be made available. To offset this, utilities are ordering shorter lead-time equipment, and going more to non-traditional options such as purchases from non-utility generators and demand side management.

Table 1 - Orders, Removals from Schedule, Installations, and Year-End Installation Backlog
Contiguous U.S. Electric Utility Systems, Nameplate Megawatts By Prime Mover, 1974-1991

Year	Prime Mover	Ordered		Removed from Schedule*		Installed		Scheduled Backlog	
		Units	MW	Units	MW	Units	MW	Units	MW
1974	Fossil Steam Turbine-Generators	99	50,442	13	8,048	49	18,917	266	131,879
	Nuclear Steam Turbine-Generators	31	37,418	10	10,009	12	10,519	148	160,454
	Combustion Turbine-Generators	37	3,339			44	5,396	83	7,004
	Generators for Hydraulic Turbines	33	2,921	—	—	15	1,565	85	12,186
	Total	200	94,120	23	18,057	120	36,397	312,105	311,523
1975	Fossil Steam Turbine-Generators	13	5,989	3	1,897	45	20,895	241	122,438
	Nuclear Steam Turbine-Generators	5	6,213	11	9,851	8	7,396	140	157,662
	Combustion Turbine-Generators	46	4,259			44	3,917	70	6,012
	Generators for Hydraulic Turbines	12	1,458	—	—	19	2,232	93	13,535
	Total	76	17,919	14	11,748	116	34,440	544	299,647
1976	Fossil Steam Turbine-Generators	15	6,786	6	4,406	29	11,685	219	111,003
	Nuclear Steam Turbine-Generators	7	8,465	2	2,414	5	4,822	143	162,122
	Combustion Turbine-Generators	28	1,620			33	2,285	69	6,488
	Generators for Hydraulic Turbines	15	2,960	—	—	10	1,629	94	14,796
	Total	65	19,831	8	6,820	77	20,421	525	294,409
1977	Fossil Steam Turbine-Generators	35	13,602	4	1,696	41	18,072	201	102,538
	Nuclear Steam Turbine-Generators	-	-	7	7,913	7	6,609	129	147,442
	Combustion Turbine-Generators	19	1,240			24	1,713	82	5,649
	Generators for Hydraulic Turbines	18	1,596	—	—	10	1,131	101	15,227
	Total	72	16,438	11	9,609	82	27,525	493	270,856
1978	Fossil Steam Turbine-Generators	35	18,333	2	1,183	34	13,971	198	103,256
	Nuclear Steam Turbine-Generators	-	-	7	7,242	3	3,029	119	137,169
	Combustion Turbine-Generators	12	673			31	1,671	37	3,380
	Generators for Hydraulic Turbines	17	1,099	—	—	32	4,058	89	12,352
	Total	64	20,105	9	8,425	100	22,729	443	256,157
1979	Fossil Steam Turbine-Generators	10	4,479	3	2,122	33	12,332	184	98,996
	Nuclear Steam Turbine-Generators	-	-	12	14,168	2	1,156	100	116,038
	Combustion Turbine-Generators	5	429			15	773	20	2,605
	Generators for Hydraulic Turbines	10	969	—	—	21	2,934	72	8,839
	Total	25	5,877	15	16,290	71	17,195	376	226,478
1980	Fossil Steam Turbine-Generators	6	2,846	6	3,902	35	18,709	157	83,005
	Nuclear Steam Turbine-Generators	-	-	9	10,587	2	1,885	94	109,383
	Combustion Turbine-Generators	7	551			8	510	17	2,485
	Generators for Hydraulic Turbines	1	15	—	—	9	1,302	66	7,708
	Total	14	3,412	15	14,489	54	22,406	334	202,581
1981	Fossil Steam Turbine-Generators	23	7,704	6	3,511	25	9,777	149	81,177
	Nuclear Steam Turbine-Generators	-	-	21	25,277	4	4,427	69	79,682
	Combustion Turbine-Generators	5	525			8	714	8	1,437
	Generators for Hydraulic Turbines	13	209	—	—	5	259	75	7,694
	Total	41	8,438	27	28,788	42	15,177	301	169,990
1982	Fossil Steam Turbine-Generators	2	94	17	11,524	24	11,057	115	61,887
	Nuclear Steam Turbine-Generators	-	-	7	8,693	1	1,183	62	70,222
	Combustion Turbine-Generators	1	36			6	389	7	1,385
	Generators for Hydraulic Turbines	9	279	—	—	16	607	63	5,998
	Total	12	409	24	20,217	47	13,236	247	139,492

Table 1 - Orders, Removals from Schedule, Installations, and Year-End Installation Backlog
Contiguous U.S. Electric Utility Systems, Nameplate Megawatts By Prime Mover, 1974-91 (cont'd)

Year	Prime Mover	Ordered		Removed from Schedule*		Installed		Scheduled Backlog	
		Units	MW	Units	MW	Units	MW	Units	MW
1983	Fossil Steam Turbine-Generators	8	902	12	7,240	15	5,964	51	49,387
	Nuclear Steam Turbine-Generators	-	-	6	5,382	3	3,027	91	59,511
	Combustion Turbine-Generators	1	75			4	301	1	75
	Generators for Hydraulic Turbines	9	869			22	740	48	6,039
	Total	18	1,846	18	12,622	44	10,032	191	115,012
1984	Fossil Steam Turbine-Generators	7	852	3	1,292	19	10,220	76	39,465
	Nuclear Steam Turbine-Generators	-	-	5	5,655	7	7,956	41	48,251
	Combustion Turbine-Generators	4	162			-	-	1	75
	Generators for Hydraulic Turbines	-	-			13	1,554	39	5,612
	Total	11	1,014	8	6,947	39	19,730	157	93,403
1985	Fossil Steam Turbine-Generators	10	1,637	8	4,670	15	5,636	59	30,250
	Nuclear Steam Turbine-Generators	-	-	-	-	7	8,255	34	39,995
	Combustion Turbine-Generators	1	25			1	75	3	74
	Generators for Hydraulic Turbines	3	69			26	3,142	12	1,681
	Total	14	1,731	8	4,670	49	17,108	108	72,000
1986	Fossil Steam Turbine-Generators	-	-	3	1,774	13	6,219	44	22,102
	Nuclear Steam Turbine-Generators	-	-	-	-	8	9,499	26	30,496
	Combustion Turbine-Generators	11	752			3	74	11	752
	Generators for Hydraulic Turbines	-	-			4	273	10	1,424
	Total	11	752	3	1,774	28	16,065	91	54,774
1987	Fossil Steam Turbine-Generators	4	220	5	2,705	6	3,610	30	15,670
	Nuclear Steam Turbine-Generators	-	-	1	1,306	7	7,586	18	21,604
	Combustion Turbine-Generators	7	825			1	25	14	1,312
	Generators for Hydraulic Turbines	1	20			2	222	8	1,176
	Total	12	1,065	6	4,011	16	11,443	70	39,762
1988	Fossil Steam Turbine-Generators	6	941	1	168	4	1,210	26	13,802
	Nuclear Steam Turbine-Generators	-	-	-	-	5	6,112	13	15,492
	Combustion Turbine-Generators	24	1,735			9	702	30	2,118
	Generators for Hydraulic Turbines	2	126			3	44	5	1,132
	Total	32	2,802	1	168	21	8,068	74	32,544
1989	Fossil Steam Turbine-Generators	4	579	4	2,000	4	2,836	25	9,925
	Nuclear Steam Turbine-Generators	-	-	-	-	3	3,634	10	11,859
	Combustion Turbine-Generators	57	4,816			16	976	73	6,331
	Generators for Hydraulic Turbines	4	397			1	6	10	1,555
	Total	65	5,792	4	2,000	24	7,452	118	29,670
1990	Fossil Steam Turbine-Generators	5	1,022	-	-	4	1,077	26	10,009
	Nuclear Steam Turbine-Generators	-	-	-	-	2	2,289	7	8,723
	Combustion Turbine-Generators	50	4,191			19	1,418	105	9,284
	Generators for Hydraulic Turbines	4	102			2	25	12	1,684
	Total	59	5,315	-	-	27	4,809	150	29,700
1991	Fossil Steam Turbine-Generators	2	875	1	650	5	2,410	19	7,553
	Nuclear Steam Turbine-Generators	-	-	-	-	-	-	7	8,723
	Combustion Turbine-Generators	27	2,133			14	931	109	9,699
	Generators for Hydraulic Turbines	4	1,018			3	683	12	1,936
	Total	33	4,026	1	650	22	4,024	147	27,911

* Data on removals of combustion turbines and hydro generators is not available.

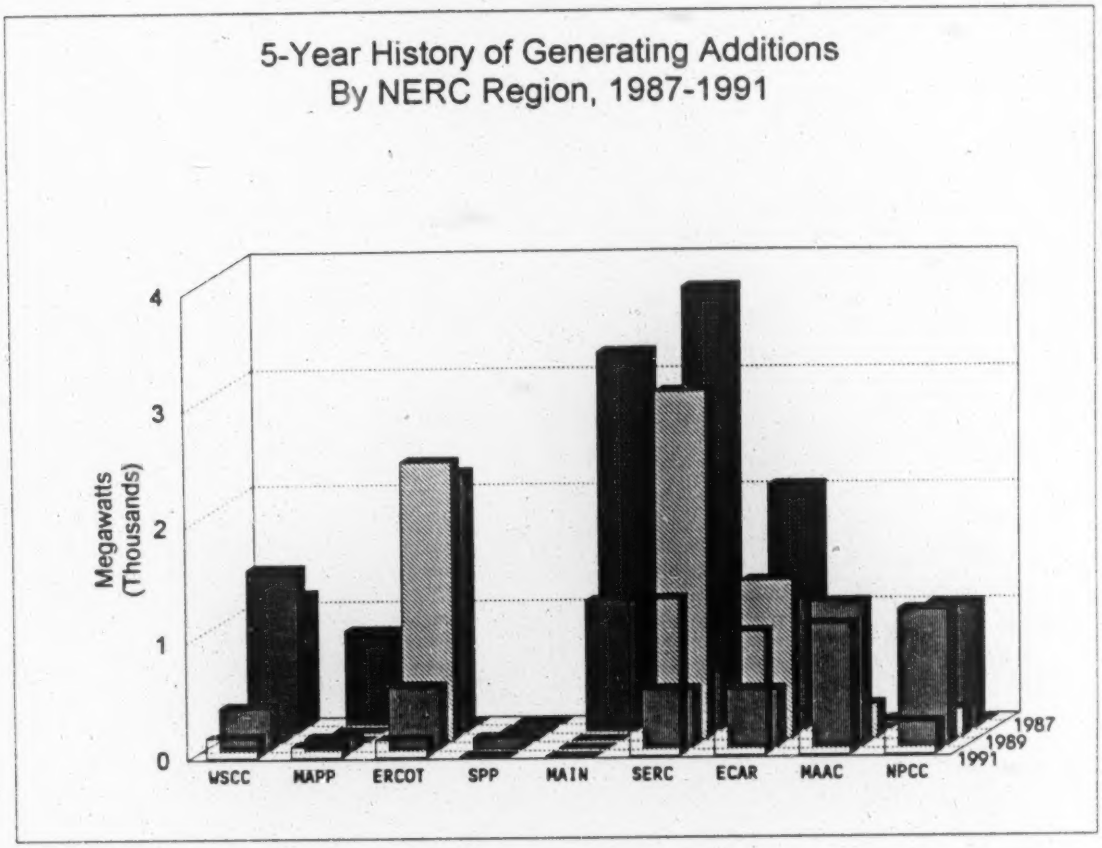
Section II: Actual and Scheduled Additions

Table 2 – 1991 Additions To Electric Generating Capability -- 1 MW or Larger

	THERMAL							
	Steam Turbine–Generators				Combustion Turbine–Generators		Diesel Engine–Generators	
	Nuclear		Conventional					
	No. of Units	MW	No. of Units	MW	No. of Units	MW	No. of Units	MW
1991 Additions	–	–	5	3,003	14	911	3	26
By Region								
NPCC	–	–	1	250	1	31	–	–
MAAC	–	–	1	642	6	520	–	–
ECAR	–	–	1	1,300	3	157	–	–
SERC	–	–	1	667	1	93	2	20
MAIN	–	–	–	–	–	–	–	–
SPP	–	–	–	–	–	–	1	6
ERCOT	–	–	1	144	–	–	–	–
MAPP	–	–	–	–	2	60	–	–
WSCC	–	–	–	–	1	50	–	–
By Ownership								
Investor–Owned	–	–	5	3,003	9	718	–	–
Federal	–	–	–	–	–	–	–	–
Municipal	–	–	–	–	5	192	3	25
Cooperative	–	–	–	–	–	–	–	–
State and Local	–	–	–	–	–	–	–	–

	HYDRAULIC				TOTAL	
	Conventional		Pumped–Storage			
	No. of Units	MW	No. of Units	MW	No. of Units	MW
1991 Additions	1	130	2	532	25	4,602
By Region						
NPCC	–	–	–	–	2	281
MAAC	–	–	–	–	7	1,162
ECAR	–	–	–	–	4	1,457
SERC	–	–	2	532	6	1,312
MAIN	–	–	–	–	–	–
SPP	–	–	–	–	1	6
ERCOT	–	–	–	–	1	144
MAPP	–	–	–	–	2	60
WSCC	1	130	–	–	2	180
By Ownership						
Investor–Owned	–	–	2	563	16	4,284
Federal	1	130	–	532	1	662
Municipal	–	–	–	–	8	217
Cooperative	–	–	–	–	–	–
State and Local	–	–	–	–	–	–

Chart 2



	WSCC	MAPP	ERCO	SPP	MAIN	SERC	ECAR	MAAC	NPCC
1987	1,115	800			3,190	3,744	2,038		
1988	1,402		2,235	6	1,120	499	1,127		1,080
1989	17		2,400	15		2,994	1,358	290	238
1990	360	98	534	98		501	495	1,243	1,175
1991	170	98	150	6		1,347	1,064	1,124	275

Table 3 – 1991 Additions To Electric Generating Capability By U.S. Electric Utilities

	System	Unit	Ownership*	Type*	Fossil Fuels	MW of Capability
	NPCC					
+	Boston Edison Company	Ocean State Power No 1	I	TC	Gas	250
	Peabody Massachusetts	Waters River No 2	M	G		31
	MAAC					
	Baltimore Gas & Electric Co	Brandon Shores No 2	I	T	Oil/Coal	642
	Delmarva Power & Light Co	Hay Road No 3	I	G	Gas	109
	Dover Delaware	Parkland GT No 1	M	G		35
	Potomac Electric Power Co	Chalk Point CT No 3	I	G	Gas/Oil	83
		Chalk Point CT No 4	I	G	Gas/Oil	83
		Chalk Point CT No 5	I	G	Gas/Oil	105
		Chalk Point CT No 6	I	G	Gas/Oil	105
	ECAR					
+	Cincinnati Gas & Electric Co	Zimmer	I	T	Coal	1,300
	IN Municipal Power Authority	Richmond No 1	M	G		38
		Richmond No 2	M	G		38
	Southern IN Gas & Elec Co	Brown GT No 1	I	G		80
	SERC					
	Alabama Power Company	Miller No 4	I	T	Coal	667
	Duke Power Company	Bad Creek No 1	I	R		266
		Bad Creek No 2	I	R		266
	Key West Florida	Stock Island No 1	M	D		10
	Key West Florida	Stock Island No 2	M	D		10
	South Carolina Elec & Gas Co	Hagood GT No 1	I	G	Gas/Oil	93
	SPP					
	Cushing Oklahoma	Muni Power Plant	M	D		6
	ERCOT					
	Texas–New Mexico Pwr Co	TNP One No 2	I	T	Coal/Gas	144
	MAPP					
	Interstate Power Company	Mason City No 1	I	G	Oil	30
		Mason City No 2	I	G	Oil	30
	WSCC					
	Anaheim California	Anaheim Comb Turbine	M	G	Gas	50
	U S Bureau of Reclamation	Hoover A3	F	H		130
		28 Generating Units Were Added With Total Capability of				4,601 MW

** See Definitions starting on Page 29 for Ownership and Type codes.*

Table 4 – Additions to Electric Generating Capability Scheduled as of January 1, 1992

	THERMAL							
	Steam Turbine–Generators				Combustion		Diesel	
	Nuclear		Conventional		Turbine–Generators		Engine–Generators	
	No. of Units	MW	No. of Units	MW	No. of Units	MW	No. of Units	MW
TOTAL SCHEDULED	7	8,420	19	7,413	109	9,209	5	28
By Year								
1992	–	–	2	564	20	1,489	5	28
1993	1	1,150	2	200	24	1,772	–	–
1994	1	1,177	3	646	34	3,028	–	–
1995	–	–	5	1,907	24	2,108	–	–
1996	–	–	3	1,780	3	236	–	–
1997	2	2,390	1	436	2	288	–	–
1998	–	–	1	645	–	–	–	–
1999	1	1,213	1	750	2	288	–	–
2001	2	2,490	–	–	–	–	–	–
2008	–	–	1	485	–	–	–	–
By Ownership								
Investor–Owned	1	1,150	14	5,173	93	8,053	–	–
Federal	4	4,780	–	–	–	–	–	–
Municipal	–	–	2	934	12	738	5	28
Cooperative	–	–	2	786	3	308	–	–
State and Local	2	2,490	1	520	1	110	–	–

	HYDRAULIC				
	Conventional		Pumped–Storage		TOTAL
	No. of Units	MW	No. of Units	MW	No. of Units	MW
TOTAL SCHEDULED	7	359	5	1,380	152	26,809
By Year						
1992	5	318	2	532	34	2,931
1993	1	10	–	–	28	3,132
1994	–	–	–	–	38	4,851
1995	1	31	3	848	33	4,894
1996	–	–	–	–	6	2,016
1997	–	–	–	–	5	3,114
1998	–	–	–	–	1	645
1999	–	–	–	–	4	2,251
2001	–	–	–	–	2	2,490
2008	–	–	–	–	1	485
By Ownership						
Investor–Owned	4	69	5	1,380	117	15,825
Federal	1	130	–	–	5	4,910
Municipal	–	–	–	–	19	1,700
Cooperative	–	–	–	–	5	1,094
State and Local	2	160	–	–	6	3,280

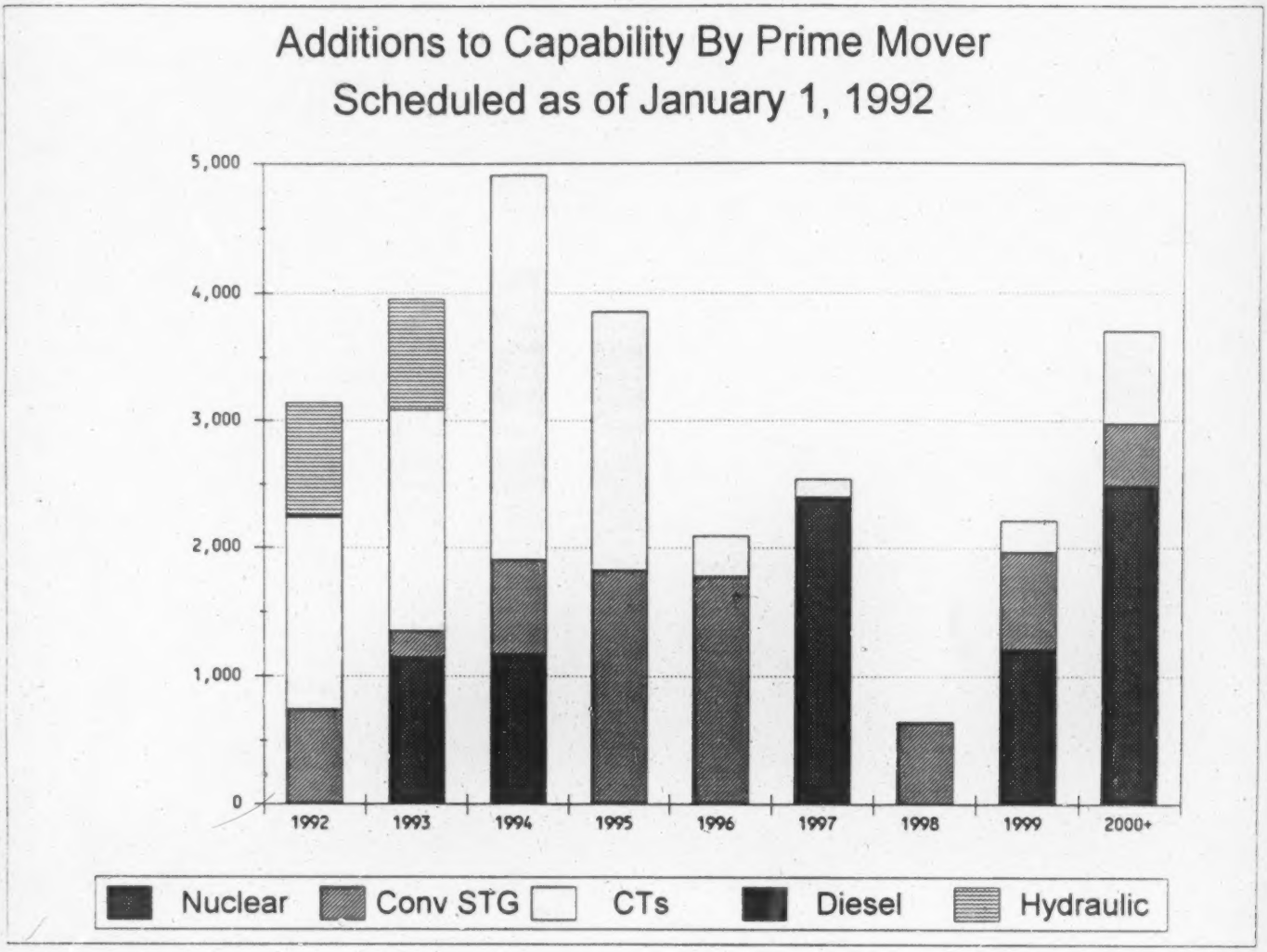

Additions to Capability By Prime Mover
Scheduled as of January 1, 1992
5,000
4,000
3,000
2,000
1,000
0
1992
1993
1994
1995
1996
1997
1998
1999
2000+
Nuclear
Conv STG
CTs
Diesel
Hydraulic

Table 5 – Scheduled Generating Capability Additions By Region and Utility as of January 1, 1992

Region / System	Unit	Owner–Ship	Type	Fossil Fuels	MW Capability	Year of Operation
NPCC						
Boston Edison Co	Edgar GT No 3	I	GC		100	95
	Edgar GT No 4	I	GC		100	95
	Edgar ST No 3	I	TC		80	95
New England Power Co	Manchester St No 09	I	G		97	95
	Manchester St No 10	I	G		97	95
	Manchester St No 11	I	G		97	95
MAAC						
Baltimore Gas & Elec	Perryman No 51	I	G		150	94
	Perryman No 52	I	G		150	94
	Perryman No 61	I	G		150	97
	Perryman No 62	I	G		150	99
Delmarva Pr & Lt Co	Hay Road No 4	I	TC		110	93
Potomac Elec Pr Co	Station H No 1	I	G		138	92
	Station H No 2	I	G		138	93
	Station H No 3	I	G		138	97
	Station H No 4	I	G		138	99
Pub Serv Elec & Gas	Burlington 12	I	G		25	93
	Burlington 13	I	G		25	93
	Burlington 14	I	G		25	93
	Burlington 15	I	G		25	93
	Burlington 16	I	G		25	93
	Burlington 17	I	G		25	93
	Burlington 18	I	G		25	93
	Burlington 19	I	G		25	93
ECAR						
Bay City Michigan	Henry St Sta No 1	M	D		8	93
	Henry St Sta No 2	M	D		8	93
Cincinnati Gas & Elec Co	Woodsdale No 1	I	G		77	93
	Woodsdale No 2	I	G		77	92
	Woodsdale No 3	I	G		77	92
	Woodsdale No 4	I	G		77	92
	Woodsdale No 5	I	G		78	92
	Woodsdale No 6	I	G		77	92
Holland Michigan	491 E 48Th St No 7	M	G		37	92
	491 E 48Th St No 8	M	G		37	92
Indiana Muni Power Agcy	Anderson No 1	M	G		38	92
	Anderson No 2	M	G		38	92
Public Service Co of IN	Cayuga No 4	I	G		103	93
	Cayuga No 5	I	G		103	94
	Cayuga No 6	I	G		100	94
SERC						
Alabama Electric Coop	McWilliams No 4	C	G	Gas	100	94
Duke Power Company	Bad Creek No 3	I	R		266	92
	Bad Creek No 4	I	R		266	92
	Lincoln County No 01	I	G	Oil/Gas	72	94
	Lincoln County No 02	I	G	Oil/Gas	72	94
	Lincoln County No 03	I	G	Oil/Gas	72	94
	Lincoln County No 04	I	G	Oil/Gas	72	94
	Lincoln County No 05	I	G	Oil/Gas	72	94

Table 5 – Scheduled Generating Capability Additions as of January 1, 1992 (continued)

Region / System	Unit	Owner-Ship	Type	Fossil Fuels	MW Capability	Year of Operation
SERC (cont'd)						
Duke Power Co (cont'd)	Lincoln County No 06	I	G	Oil/Gas	72	94
	Lincoln County No 07	I	G	Oil/Gas	72	94
	Lincoln County No 08	I	G	Oil/Gas	72	94
	Lincoln County No 09	I	G	Oil/Gas	72	94
	Lincoln County No 10	I	G	Oil/Gas	72	94
	Lincoln County No 11	I	G	Oil/Gas	72	94
	Lincoln County No 12	I	G	Oil/Gas	72	94
	Lincoln County No 13	I	G	Oil/Gas	72	95
	Lincoln County No 14	I	G	Oil/Gas	72	95
	Lincoln County No 15	I	G	Oil/Gas	72	95
	Lincoln County No 16	I	G	Oil/Gas	72	95
Florida Power Corp	Debary No 07	I	G	Oil	70	92
	Debary No 08	I	G	Oil	70	92
	Debary No 09	I	G	Oil	70	92
	Debary No 10	I	G	Oil	70	92
	Intercession City 07	I	G	Oil	76	93
	Intercession City 08	I	G	Oil	76	93
	Intercession City 09	I	G	Oil	76	93
	Intercession City 10	I	G	Oil	76	93
Florida Power & Light Co	Fort Lauderdale #4A	I	GC	Gas/Oil	143	93
	Fort Lauderdale #4B	I	GC	Gas/Oil	143	93
	Fort Lauderdale #5A	I	GC	Gas/Oil	143	93
	Fort Lauderdale #5B	I	GC	Gas/Oil	143	93
	Martin CC 3	I	TC	Gas/Oil	164	94
	Martin CC 3A	I	GC	Gas/Oil	143	94
	Martin CC 3B	I	GC	Gas/Oil	143	94
	Martin CC 4	I	TC	Gas/Oil	164	95
	Martin CC 4A	I	GC	Gas/Oil	143	95
	Martin CC 4B	I	GC	Gas/Oil	143	95
Georgia Power Co	Rocky Mountain PS 1	I	R		283	95
	Rocky Mountain PS 2	I	R		283	95
	Rocky Mountain PS 3	I	R		283	95
Kissimmee Florida	Cane Island	M	G	Gas/Oil	32	93
Lakeland Florida	Larsen GT No 4	M	G	Gas/Oil	79	92
Old Dominion El Coop	Clover No 1	C	T	Coal	393	94
+	Clover No 2	C	T	Coal/Oil	393	95
Orlando Florida	Indian River C	M	G		104	92
	Indian River D	M	G		104	92
	Stanton No 2	M	T	Coal	436	97
So Car Pub Serv Authy	Cross No 1	SL	T	Coal	520	95
So Carolina Elec & Gas	Cope No 1	I	T	Coal/Gas	385	96
Southern Company	1995 Peaker A	I	G	Gas	80	95
	1995 Peaker B	I	G	Gas	80	95
	1995 Peaker C	I	G	Gas	80	95
	1995 Peaker D	I	G	Gas	80	95
	1995 Peaker E	I	G	Gas	80	95
	1995 Peaker F	I	G	Gas	80	95

Table 5 – Scheduled Generating Capability Additions as of January 1, 1992 (continued)

	Region / System	Unit	Owner-Ship	Type	Fossil Fuels	MW Capability	Year of Operation
	SERC (cont'd)						
	Southern Services	Mcintosh No 1	I	G	Gas	80	94
		Mcintosh No 2	I	G	Gas	80	94
		Mcintosh No 3	I	G	Gas	80	94
		Mcintosh No 4	I	G	Gas	80	94
		Mcintosh No 5	I	G	Gas	80	94
		Mcintosh No 6	I	G	Gas	80	94
		Mcintosh No 7	I	G	Gas	80	95
		Mcintosh No 8	I	G	Gas	80	95
	Tennessee Valley Authy	Bellefonte No 1	F	N		1,213	97
		Bellefonte No 2	F	N		1,213	99
		Watts Bar No 1	F	N		1,177	94
		Watts Bar No 2	F	N		1,177	97
	Vero Beach Florida	Vero Beach No 5	M	GC	Gas/Oil	34	92
	Virginia Power	Chesterfield No 8	I	GC	Gas/Oil	139	92
		Chesterfield No 8	I	TC		66	92
	MAIN						
	Wisconsin Electric Pr Co	Concord One No 1	I	G		75	93
		Concord One No 2	I	G		75	94
		Concord One No 3	I	G		75	95
		Concord One No 4	I	G		75	96
		Paris No 1	I	G		75	95
		Paris No 2	I	G		75	95
		Paris No 3	I	G		75	96
		Paris No 4	I	G		75	95
	Wisconsin Pub Srv Corp	So Fond Du Lac No 1	I	G		86	93
		West Marinette No 3	I	G		75	93
	Wisconsin Power & Lt Co	So Fond Du Lac No 2	I	G		86	94
		So Fond Du Lac No 3	I	G		86	94
		So Fond Du Lac No 4	I	G		86	96
	SPP						
	Kingman Kansas	Muni Power Plant	M	D		6	93
	Springfield Missouri	James River GT No 2	M	G		74	92
	ERCOT						
	Brazos Electric Coop	Miller No 4	C	G		104	94
		Miller No 5	C	G		104	94
	Houston Ltg & Pr Co	Malakoff No 1	I	T	Coal	645	96
		Malakoff No 2	I	T	Coal	645	98
	San Antonio Texas	J K Spruce No 1	M	T	Coal	498	92
+	Texas Util Co Sys	Comanche Peak No 2	I	N		1,150	93
+		Forest Grove No 1	I	T	Coal	750	99
+		Twin Oak No 1	I	T	Coal	750	95
+		Twin Oak No 2	I	T	Coal	750	96
	MAPP						
	Auburn Nebraska	Muni Power Plant	M	D		4	93
	Northern States Power	Pathfinder No 1 SD	I	G		105	94
		Pathfinder No 2 SD	I	G		105	94
	Story City Iowa	Diesel No 8	M	D		3	93

Table 5 – Scheduled Generating Capability Additions as of January 1, 1992 (continued)

	Region / System	Unit	Owner–Ship	Type	Fossil Fuels	MW Capability	Year of Operation
	WSCC						
	Calif Dept Water Res	Devil Canyon No 3	SL	H		80	92
		Devil Canyon No 4	SL	H		80	92
	Idaho Power Co	Milner No 1	I	H		14	92
		Milner No 2	I	H		14	92
		Swan Falls Rebuild	I	H		10	93
		Twin Falls	I	H		31	95
	Imperial Irrigation Dist	Electroc #2 Repower	SL	GC		110	93
	LA Dept of Wtr & Pwr	Harbor 10A	M	GC	Gas	80	94
		Harbor 10B	M	GC	Gas	80	94
	Nevada Power Co	Allen No 1	I	G	Gas/Oil	70	94
		Clark No 09	I	TC	Gas/Oil	90	93
		Clark No 10	I	TC	Gas/Oil	90	94
	Pub Serv Co of Colorado	Pawnee No 2	I	T	Coal	485	08
	U S Bureau Of Reclam	Hoover A4	F	H		130	92
+	Washington PPSS	WPPSS No 1	SL	N		1,250	01
+		WPPSS No 3	SL	N		1,240	01
	TOTAL			152 Units		26,808 MW	

Table 6 – Changes In Scheduled Operation Date of Nuclear and Conventional Steam Turbine–Generators Removed from Schedule and Delayed a Year or More Between January 1, 1991 and January 1, 1992

Nuclear Units Removed from Schedule

None

Nuclear Units Delayed One Year or More

Owner:	Tennessee Valley Authority	Tennessee Valley Authority
Unit:	Watts Bar No. 1	Watts Bar No. 2
MW Nameplate Capacity:	1,218	1,218
MW Expected Capability:	1,177	1,177
Scheduled Operation Date:		
As of January 1, 1991:	04–92	10–95
As of January 1, 1992:	04–94	10–97

Conventional Units Removed from Schedule

Owner:	East Kentucky Power Coop
Unit:	Smith No. 1
MW Nameplate Capacity:	650
MW Expected Capability:	600
Scheduled Operation Date:	
As of January 1, 1991:	1999
As of January 1, 1992:	Removed

Conventional Units Delayed One Year or More

Owner:	None	
Unit:		
MW Nameplate Capacity:		
MW Expected Capability:		
Scheduled Operation Date:		
As of January 1, 1991:		
As of January 1, 1992:		

Owner:		
Unit:		
MW Nameplate Capacity:		
MW Expected Capability:		
Scheduled Operation Date:		
As of January 1, 1991:		
As of January 1, 1992:		

Section III: Orders and Shipments of Heavy Electric Power Equipment

Table 7 – Ordering of Heavy Electric Power Equipment by U.S. Electric Utility Systems From Domestic and Foreign Manufacturers, Nameplate Ratings in Kilowatts

	1987	1988	1989	1990r	1991
Steam Turbine–Generators, kW					
Conventional	220,400 (a)	860,600 (a)	579,000	931,794 (a)	874,600 (a)
Nuclear	–	–	–	–	–
Combustion Turbine–Generators, kW	824,500	1,571,300	4,816,000	3,984,500	2,132,600
Diesel Engine–Generators, kW	18,900	–	25,510	3,155 (a)	25,630 (a)
Generators for Hydraulic Turbines, kW	20,400	126,000	396,800	102,900	1,018,300
	1,084,200	2,557,900	5,817,310	5,022,349	4,051,130
Steam Generators, 1,000 Lb Steam/Hour	–	250 (a)	4,100 (a)	12,790 (a)	4,178 (a)
Nuclear Power Reactors	–	–	–	–	–
Hydraulic Turbines, Hp	–	145,600 (a)	59,300	76,910	97,400 (a)
Power Transformers, MVA (b)	78,233 (a)	82,502 (a)	88,180 (a)	89,214 (a)	81,563 (a)

(a) No orders to foreign manufacturers of this type of equipment during this particular year.
(b) Includes U.S. industrials.
r Revised

Table 8 – Shipments of Heavy Electric Power Equipment to U.S. Electric Utility Systems From Domestic and Foreign Manufacturers, Nameplate Ratings in Kilowatts

	1987	1988	1989	1990r	1991
Steam Turbine–Generators, kW					
Conventional	576,000	706,600 (a)	241,700 (a)	2,051,526 (a)	–
Nuclear	–	–	–	–	–
Combustion Turbine–Generators, kW	713,200	1,053,500 (a)	750,400	2,232,800 (a)	1,864,500
Diesel Engine–Generators, kW	6,300 (a)	12,600 (a)	6,300 (a)	19,210 (a)	–
Generators for Hydraulic Turbines, kW	70,000	–	721,000	563,400	338,500
	1,365,500	1,772,700	1,719,400	4,866,936	2,203,000
Steam Generators, 1,000 Lb Steam/Hour	–	4,961 (a)	29,700 (a)	6,375 (a)	12,981 (a)
Nuclear Power Reactors (b)	6,140,000 (a)	6,970,000 (a)	4,568,000 (a)	1,200,000 (a)	–
Hydraulic Turbines, Hp	59,200	18,600	134,320	1,427,100	293,200
Power Transformers, MVA (c)	65,660	75,878	80,615	80,413	78,509

(a) No shipments from foreign manufacturers of this type of equipment during this particular year.
(b) In terms of attainment of full power operation, not shipment.
(c) Includes U.S. industrials.
r Revised

Table 9 – Shipments and Orders of Electric Generating Equipment Manufacturers: Steam, Hydraulic And Combustion Turbine Units – – 1,000 kW and Larger*

Customer	Shipped 1991	Scheduled as of January 1, 1992 1992	1993	1994	1995 and Later	Total Scheduled for Shipment as of 1–1–92	New Orders 1991
U.S. Electric Utilities							
Units	23	31	13	26	9	79	25
kW	1,713,736	4,790,655	1,321,400	2,400,600	1,620,686	10,133,341	2,053,800
U.S. Industrials							
Units	81	39	7	4	–	50	42
kW	3,786,735	1,957,290	383,000	170,800	–	2,511,090	2,011,800
Exports from U.S.							
Units	45	29	9	8	15	61	43
kW	5,101,040	5,706,400	3,480,730	3,253,000	6,201,000	18,641,130	10,155,640
Total							
Units	149	99	29	38	24	190	110
kW	10,601,511	12,454,345	5,185,130	5,824,400	7,821,686	31,285,561	14,221,240

** Summation of Tables 10, 11, and 14.*

Table 10 – Shipments and Orders of Steam Turbine–Generator Manufacturers 1,000 kW and Larger*

Customer	Shipped 1991	Scheduled as of January 1, 1992 1992	1993	1994	1995 and Later	Total Scheduled for Shipment as of 1–1–92	New Orders 1991
U.S. Elec Utilities							
Units	1	6	1	5	2	14	4
kW	180,736	2,467,755	90,000	524,200	882,686	3,964,641	434,200
U.S. Industrials							
Units	30	15	1	3	–	19	19
kW	1,047,035	657,610	40,000	110,800	–	808,410	779,220
Exports from U.S.							
Units	11	9	7	6	9	31	13
kW	2,295,600	3,458,000	3,386,730	2,829,000	4,929,000	14,602,730	7,935,000
Total							
Units	42	30	9	14	11	64	36
kW	3,523,371	6,583,365	3,516,730	3,464,000	5,811,686	19,375,781	9,148,420

** Summation of Tables 10A and 10B.*

Table 10A – Shipments and Orders of Conventional Steam–Turbine Manufacturers 1,000 kW and Larger (Included in Table 10)

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	–	7	1	2	1	11	2
kW	–	2,557,755	90,000	874,600	508,000	4,030,355	874,600
U.S. Industrials							
Units	24	16	–	2	–	18	19
kW	949,510	697,610	–	80,000	–	777,610	779,220
Exports from U.S.							
Units	11	8	5	4	4	21	8
kW	2,295,600	2,458,000	1,686,730	424,000	424,000	4,992,730	2,425,000
Total							
Units	35	31	6	8	5	50	29
kW	3,245,110	5,713,365	1,776,730	1,378,600	932,000	9,800,695	4,078,820
U.S. Electric Utility Orders from Foreign Manufacturers (Imports)							
Units	–	–	2	–	–	2	–
kW	–	–	230,000	–	–	230,000	–
U.S. Industrial Orders from Foreign Manufacturers							
Units	12	7	5	–	–	12	9
kW	897,300	653,555	382,000	–	–	1,035,555	837,000

Table 10B – Shipments and Orders of Nuclear Steam Turbine–Generator Manufacturers 50,000 kWe and Larger (Included in Table 10)

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Elec Utilities							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
U.S. Industrials							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
Exports from U.S.							
Units	–	1	2	2	5	10	5
kW	–	1,000,000	1,700,000	2,405,000	4,505,000	9,610,000	5,510,000
Total							
Units	–	1	2	2	5	10	5
kW	–	1,000,000	1,700,000	2,405,000	4,505,000	9,610,000	5,510,000

Table 11 – Shipments and Orders of Manufacturers of Generators for Hydraulic Turbines* 1,000 kW and Larger

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
U.S. Industrials							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
Exports from U.S.							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
Total							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
U.S. Electric Utility Orders from Foreign Manufacturers (Imports)							
Units	5	4	3	–	–	7	4
kW	338,500	486,200	693,300	–	–	1,179,500	1,018,300
U.S. Industrial Orders from Foreign Manufacturers							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–

** Includes generators for pumped–storage plants.*

Table 12 – Shipments and Orders of Conventional Steam Generator (Boiler) Manufacturers Rated in Thousands of Pounds of Steam Per Hour, 450 Psi and Higher*

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Elec Utilities							
Units	4	5	1	1	1	8	5
kW	12,981	4,978	4,100	3,100	3,000	15,178	4,178
U.S. Industrials							
Units	14	4	2	3	–	9	1
kW	6,851	2,621	1,650	1,713	–	5,984	274
Exports from U.S.							
Units	4	5	5	2	–	12	3
kW	9,440	10,720	13,711	5,007	–	29,438	11,464
Total							
Units	22	14	8	6	1	29	9
kW	29,272	18,319	19,461	9,820	3,000	50,600	15,916

** Psi = pounds per square inch (pressure)*

Table 13 – Shipments and Orders of Hydraulic Turbine Manufacturers
5,000 Horsepower and Larger

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	14	3	1	1	1	6	8
Hp	281,000	20,800	22,400	14,000	9,360	66,560	97,400
U.S. Industrials							
Units	–	1	–	–	–	1	1
Hp	–	10,200	–	–	–	10,200	10,200
Exports from U.S.							
Units	2	9	9	–	–	18	1
Hp	288,000	1,961,340	1,215,000	–	–	3,176,340	23,340
Total							
Units	16	13	10	1	1	25	10
Hp	569,000	1,992,340	1,237,400	14,000	9,360	3,253,100	130,940
U.S. Electric Utility Orders from Foreign Manufacturers (Imports)							
Units	1	1	–	–	–	1	–
Hp	12,200	23,810	–	–	–	23,810	–
U.S. Industrial Orders from Foreign Manufacturers							
Units	–	–	–	–	–	–	–
Hp	–	–	–	–	–	–	–

Table 14 – Shipments and Orders of Combustion Turbine–Generator Manufacturers
1,000 kW and Larger

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	21	24	11	23	5	63	19
kW	1,449,500	2,219,900	1,147,900	2,043,400	571,000	5,982,200	1,452,600
U.S. Industrials							
Units	40	24	3	1	2	30	20
kW	2,247,700	1,299,680	223,000	60,000	42,000	1,624,680	1,112,580
Exports from U.S.							
Units	34	20	5	2	6	33	33
kW	2,805,440	2,248,400	214,000	424,000	1,272,000	4,158,400	2,340,640
Total							
Units	95	68	19	26	13	126	72
kW	6,502,640	5,767,980	1,584,900	2,527,400	1,885,000	11,765,280	4,905,820
U.S. Electric Utility Orders from Foreign Manufacturers (Imports)							
Units	5	4	10	6	1	21	8
kW	415,000	332,000	842,000	502,000	83,000	1,759,000	680,000
U.S. Industrial Orders from Foreign Manufacturers							
Units	–	1	–	–	1	2	1
kW	–	83,000	–	–	46,900	129,900	83,000

Table 15 – Shipments and Orders of Diesel Engine–Generator Manufacturers 1,000 kW and Larger

Customer	Shipped	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	–	5	–	–	–	5	4
kW	–	28,785	–	–	–	28,785	25,630
U.S. Industrials							
Units	–	6	–	–	–	6	1
kW	–	19,826	–	–	–	19,826	1,710
Exports from U.S.							
Units	–	–	–	–	–	–	–
kW	–	–	–	–	–	–	–
Total							
Units	–	11	–	–	–	11	5
kW	–	48,611	–	–	–	48,611	27,340

Table 16 – Completion Schedules and Orders of Nuclear Reactor Manufacturers 50,000 kWe and Larger

Customer	Completed*	Scheduled as of January 1, 1992				Total Scheduled for Shipment as of 1–1–92	New Orders
	1991	1992	1993	1994	1995 and Later		1991
U.S. Electric Utilities							
Units	–	1	–	1	6	8	–
kWe	–	1,150,000	–	1,177,000	7,375,000	9,702,000	–
Exports from U.S.							
Units	–	–	1	1	7	9	–
kWe	–	–	654,000	1,150,000	7,282,000	9,086,000	–
Total							
Units	–	1	1	2	13	17	–
kWe	–	1,150,000	654,000	2,327,000	14,657,000	18,788,000	–

** Has achieved full power operation, i.e., generator portion has gone into commercial operation.*

Table 17 – Scheduled Shipments of Electric Power Generating Equipment to U.S. Electric Utilities, By NERC Region, as of January 1, 1992 (MW of Nameplate Capacity)

Region	Conventional Steam Turbine–Generators	Generators for Hydraulic Turbines	Combustion Turbine–Generators	Diesel Engine–Generators	Total
NPCC	–	–	517	–	517
MAAC	150	–	1,243	–	1,393
ECAR	650	–	392	16	1,058
SERC	1,609	975	3,802	–	6,386
MAIN	–	–	1,080	–	1,080
SPP	–	–	84	6	90
ERCOT	643	–	208	–	851
MAPP	–	–	416	7	423
WSCC	1,063	204	187	–	1,454
NERC U.S.	4,115	1,179	7,929	29	13,252

Table 18 – Scheduled Shipments of Electric Generating Equipment to U.S. Industrial Customers, By State, as of January 1, 1992 (MW Nameplate Ratings)

State/Census Division	Steam Turbine–Generators	Diesel Engine–Generators	Combustion Turbine–Generators	Generators for Hydraulic Turbines	Total
Maine	–	–	–	–	–
New Hampshire	–	–	–	–	–
Vermont	–	–	–	–	–
Massachusetts	180.6	–	331.5	–	512.1
Rhode Island	–	–	–	–	–
Connecticut	–	–	–	–	–
New England	180.6	–	331.5	–	512.1
New York	52.4	–	555.3	5.5	613.2
New Jersey	106.9	–	83.5	–	190.4
Pennsylvania	196.0	–	–	–	196.0
Middle Atlantic	355.3	–	638.8	5.5	999.6
Ohio	–	–	–	–	–
Indiana	–	–	–	–	–
Illinois	–	12.6	–	–	12.6
Michigan	93.0	–	–	–	93.0
Wisconsin	–	–	–	–	–
East North Central	93.0	12.6	–	–	105.6
Minnesota	–	–	–	–	–
Iowa	–	–	–	–	–
Missouri	–	–	–	–	–
North Dakota	–	–	–	–	–
South Dakota	–	–	–	–	–
Nebraska	–	–	–	–	–
Kansas	–	–	–	–	–
West North Central	–	–	–	–	–
Delaware	–	–	–	–	–
Maryland	–	–	–	–	–
District of Columbia	–	–	–	–	–
Virginia	1.8	–	–	–	1.8
West Virginia	–	–	–	–	–
North Carolina	193.3	–	–	–	193.3
South Carolina	–	–	–	–	–
Georgia	0.6	–	–	–	0.6
Florida	388.3	1.7	204.0	–	594.0
South Atlantic	584.0	1.7	204.0	–	789.7
Kentucky	–	–	–	–	–
Tennessee	33.0	–	–	–	33.0
Alabama	–	–	–	–	–
Mississippi	–	–	–	–	–
East South Central	33.0	–	–	–	33.0
Arkansas	–	–	–	–	–
Louisiana	–	–	–	–	–
Oklahoma	–	–	–	–	–
Texas	40.0	–	327.2	–	367.2
West South Central	40.0	–	327.2	–	367.2
Montana	–	–	–	–	–
Idaho	–	–	–	–	–
Wyoming	–	–	–	–	–
Colorado	–	–	–	–	–
New Mexico	–	–	–	–	–
Arizona	–	–	–	–	–
Utah	–	–	–	–	–
Nevada	–	–	–	–	–
Mountain	–	–	–	–	–
Washington	–	–	–	–	–
Oregon	–	–	–	–	–
California	61.0	–	–	–	61.0
Pacific	61.0	–	–	–	61.0
Alaska	–	–	–	–	–
Hawaii	19.0	–	–	–	19.0
Alaska & Hawaii	19.0	–	–	–	19.0
State Unknown	487.0	–	321.2	10.2	818.4
Total United States	1,852.9	14.3	1,822.7	15.7	3,705.6

Table 19 – Lead Times in Months for Steam Turbine–Generators Placed In Service From 1981 through 1990 By U.S. Electric Utilities

(Crosstab of Units by kW Size Range by Range of Number of Months Between Order and Service Dates)

Yrs	Range of Months	0 kW to 99,999	100,000 to 199,999	200,000 to 299,999	300,000 to 399,999	400,000 to 499,999	500,000 to 599,999	600,000 to 699,999	700,000 to 799,999	800,000 to 899,999	1,300,000 1,399,999	TOTALS
(1)	1 to 12											0
(2)	13 to 24	1	1									2
(3)	25 to 36	11	1									12
(4)	37 to 48	7	1	1								9
(5)	49 to 60	2		5	3	2	1	3				16
(6)	61 to 72		3	2	1	1	4	2		2		15
(7)	73 to 84				1	3	4	4				12
(8)	85 to 96			3	3	3	5			1		15
(9)	97 to 108		1		1	2		1	1	1		11
(10)	109 to 120					3		2	1	2		8
(11)	121 to 132		1			3	1	2	1		1	9
(12)	133 to 144				1	1		1	1	1		5
(13)	145 to 156						1	3	2	2		8
(14)	157 to 168											0
(15)	169 to 180					1				1		2
(16)	181 to 192										1	1
(17)	193 to 204						1	1				2
(18)	205 to 216							1				1
	ALL	21	8	11	10	19	21	20	6	10	2	128

Table 20 – Lead Times In Months for Combustion Turbines Placed In Service From 1981 through 1990 By U.S. Electric Utilities

(Crosstab of Units by kW Size Range by Range of Number of Months Between Order and Service Dates)

Yrs	Range of Months	0 kW to 19,999	20,000 to 39,999	40,000 to 59,999	60,000 to 79,999	80,000 to 99,999	100,000 to 119,999	120,000 to 139,999	140,000 to 179,999	TOTALS
(1)	1 TO 6									0
*	7 TO 12	1	3		4	1				9
(2)	13 TO 18		6	1	6					13
*	19 TO 24		5	1	15	1	2		1	25
(3)	25 TO 36	1	2		4	1		3	1	12
(4)	37 TO 48		1							1
(5)	49 TO 60					3	1			4
(6)	61 TO 72				1					1
(7)	73 TO 84									0
(8)	85 TO 96									0
(9)	97 TO 108									0
(10)	109 TO 120			2						2
	ALL	2	17	4	30	6	3	3	2	67

Table 21 -- Shipments of and Orders for Power Transformers, 501 kVA and Larger

Customer		Shipped 1991	Scheduled as of January 1, 1992: 1992	1993	1994	1995	1996 and Later	Total Scheduled for Shipment as of 1-1-92	New Orders 1991
501 to 10,000 kVA									
U.S. Electric Utilities and U.S. Industrials	(Units	4,191	2,404	5	6	–	–	2,415	3,547
	(MVA	12,639	6,673	11	41	–	–	6,725	11,776
Exports from U.S.	(Units	129	171	–	–	–	–	171	127
	(MVA	946	410	–	–	–	–	410	369
TOTAL	(Units	4,320	2,575	5	6	–	–	2,586	3,674
	(MVA	13,585	7,083	11	41	–	–	7,135	12,145
10,001 to 30,000 kVA									
U.S. Electric Utilities and U.S. Industrials	(Units	697	516	13	–	4	–	533	613
	(MVA	17,301	10,648	314	–	104	–	11,066	15,670
Exports from U.S.	(Units	5	2	–	–	–	–	2	3
	(MVA	86	50	–	–	–	–	50	63
TOTAL	(Units	702	518	13	–	4	–	535	616
	(MVA	17,387	10,698	314	–	104	–	11,116	15,733
30,001 to 100,000 kVA									
U.S. Electric Utilities and U.S. Industrials	(Units	274	231	13	6	–	–	250	278
	(MVA	18,717	14,959	892	650	–	–	16,501	20,530
Exports from U.S.	(Units	–	2	–	–	–	–	2	2
	(MVA	–	93	–	–	–	–	93	93
TOTAL	(Units	274	233	13	6	–	–	252	280
	(MVA	18,717	15,052	892	650	–	–	16,594	20,623
100,000 kVA and Larger									
U.S. Electric Utilities and U.S. Industrials	(Units	86	106	29	–	–	–	135	101
	(MVA	29,852	30,313	6,433	–	–	–	36,746	33,587
Exports from U.S.	(Units	–	1	–	–	–	–	1	1
	(MVA	–	567	–	–	–	–	567	340
TOTAL	(Units	86	107	29	–	–	–	136	102
	(MVA	29,852	30,880	6,433	–	–	–	37,313	33,927
Total (501 kVA and Larger)									
U.S. Electric Utilities and U.S. Industrials	(Units	5,248	3,257	60	12	4	–	3,333	4,539
	(MVA	78,509	62,593	7,650	691	104	–	71,038	81,563
Exports from U.S.	(Units	134	176	–	–	–	–	176	133
	(MVA	1,032	1,120	–	–	–	–	1,120	865
TOTAL	(Units	5,382	3,433	60	12	4	–	3,509	4,672
	(MVA	79,541	63,713	7,650	691	104	–	72,158	82,428

Table 22 – History of Manufacturers' Name Changes, Mergers, Buy–Outs, Reorganizations

Current Company Name Previous Names	NOTES
ABB Combustion Engineering Combustion Engineering	ABB purchased Combustion Engineering November 1989.
Allis–Chalmers Transformers	Out of Business
Allison	General Motors subsidiary
American Elin Corporation	Germany
American Hydro Corp.	
American M.A.N.	Out of Business
Ansaldo	Out of Business
ASEA Brown Boveri	merger of ASEA (Swedish) and Brown Boveri (Swiss)
Atomics International	Out of Business -- gas–cooled reactors
B&W Nuclear Technologies Babcock & Wilcox Co.	a partnership of B&W Co. and Framatome, SA
Babcock & Wilcox Company	boilers
Bofors	Out of Business
Brown Boveri Turbomachinery Turbodyne Corporation	Worthington's GT business taken over by Brown Boveri Turbomachinery formerly Worthington Corp.
Canadian General Electric, Ltd.	Canada -- hydraulic turbines
C. H. Wheeler Manufacturing Company	Out of Business
Cooper–Bessemer Reciprocating Cooper–Bessemer	Cooper Industries before 1989 Cooper Energy Services before 1986
Curtiss–Wright Corp.	Out of Business -- combustion turbines
Dresser–Rand	
Electric Machinery Manufacturing Co.	Out of Business
Elliott Company	spun off by United Technologies in 1987 -- steam turbine–generators
Fairbanks Morse Engine Div.	Division of Colt Industries
Foster Wheeler Energy Corp.	Foster Wheeler Corp. before 1987 -- boilers
Fuji Electric Power Co.	Japan
GEC Alsthom English Electric absorbed in 1991	UK/France
General Electric Company	
General Electric Co. (Pittsfield)	Closed down in 1986 -- transformers
Hitachi	Japan
Imo Industries, Inc. Imo Delaval, Inc. before 1990	dropped out of diesel engine–generator business end of 1990 formerly DeLaval Turbine, Inc. Transamerica DeLaval before 1987

Table 22 – History of Manufacturers' Name Changes, Mergers, Buy–Outs, Reorganizations (cont'd)

Current Company Name Previous Names	NOTES
John Brown Engineering, Ltd.	Scotland -- combustion turbines
Kuhlman Corporation	transformers
The James Leffel & Company	Out of Business -- hydraulic turbines
Lummus Company	Out of Business
MagneTek ASEA Brown Boveri	forced divestiture of transformer division from ASEA Brown Boveri formerly RTE–ASEA Corp.
McGraw–Edison Company Worthington Turbine	steam turbine–generators
McGraw–Edison Power Systems	transformers -- Bought by Cooper Industries in 1985
Meidensha Electric Mfg. Co.	Japan
Mitsubishi	Japan
Mitsui	Japan
NEI Parsons, Ltd.	UK
Newport News Industrial	Out of Business
Nissho–Iwai America Corp.	Japan
North American Transformer Federal Pacific Transformer	transformers
Riley Consolidated, Inc. Riley–Stoker before 1988	boilers
RTE Corporation	transformers
Siemens Energy & Automation Siemens Corp.	Germany
Siemens Power Corp. Siemens–Allis, Inc.	
Siemens Power Corp. Utility Power Corp.	formerly Allis–Chalmers
Standard Transformer Co.	Out of Business end of May 1980
Stewart & Stevenson	combustion turbines
Toshiba	Japan
Turbo Power & Marine	United Technologies subsidiary
Voith Hydro, Inc. Allis–Chalmers before 1988	
Wagner Electric Corp.	Out of Business in 1978
Welsh & Weedner	Out of Business
Westinghouse ABB Power T&D Co.	transformers
Westinghouse Canada	Canada
Westinghouse Electric Corp.	

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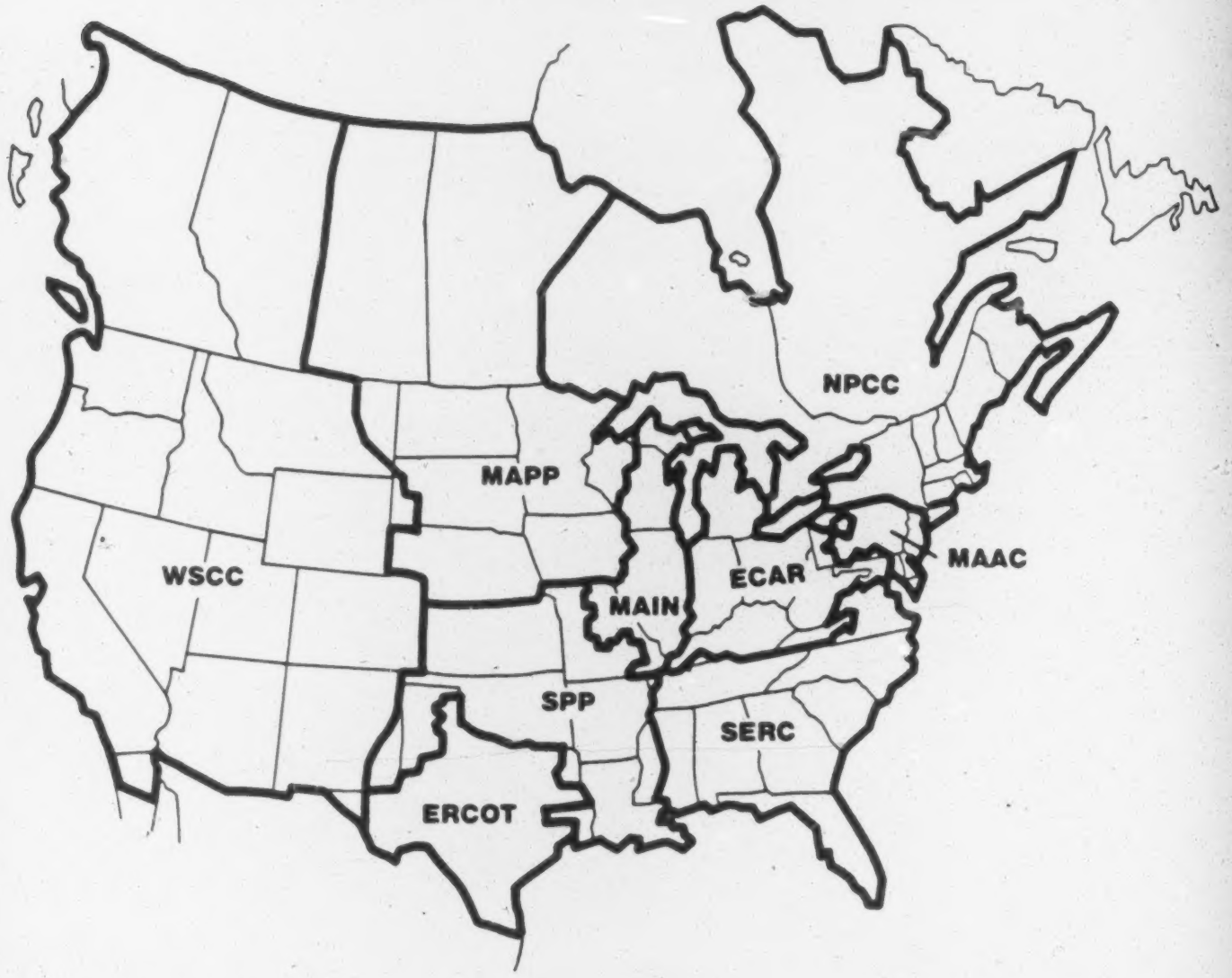

ECAR
East Central Area Reliability Coordination Agreement

ERCOT
Electric Reliability Council of Texas

MAAC
Mid-Atlantic Area Council

MAIN
Mid-America Interconnected Network

MAPP
Mid-Continent Area Power Pool

NPCC
Northeast Power Coordinating Council

SERC
Southeastern Electric Reliability Council

SPP
Southwest Power Pool

WSCC
Western Systems Coordinating Council

AFFILIATE

ASCC
Alaska Systems Coordinating Council

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COVERAGE AND DEFINITION OF TERMS

CAPABILITY is the maximum load which a generating unit has been proven to or can be expected to carry for a given period of time, without exceeding approved limits of temperature and stress.

NAMEPLATE RATING (CAPACITY) is the full-load nominal rating of a prime mover, generator or other piece of electrical equipment under specified conditions as designated by the manufacturers.

NERC U.S., as used in this publication, is equivalent to the lower forty-eight contiguous states; Alaska and Hawaii are omitted.

Codes for Generating Units Placed in Service And Scheduled for Service (Tables 2 and 4)

OWNERSHIP	CODE
Investor-Owned	I
Federal	F
Municipal	M
Cooperative	C
State & Local	SL

TYPE	CODE
Conventional steam turbine-generator	T
Nuclear steam turbine-gen	N
Combustion turbine-generator	G
Diesel engine-generator	D
Hydraulic	
Hydro turbine-generator	H
Pumped-storage turbine-generator	S
Reversible pumped-storage turbine-generator	R
Combined-Cycle	
Combustion turbine-generator for combined-cycle operation	GC
Conventional steam turbine-generator for combined-cycle operation	TC

+ Denotes multiple ownership of the unit. In such cases, the name of the participating utility system in whose service area the installation will be located is shown.

NOTE: Megawatts shown for individual generating units represent, in most cases, the net operating capability expected by the utility system; in other cases they represent the manufacturer's nameplate rating of the unit.

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Problems and Limitations of Intercompany Comparisons of Investor-Owned Electric Utilities
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